

**FUNDAMENTAL SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 2010**

STATE: MICHIGAN

NAME OF PROJECT: FUNDAMENTAL PROGRAM (PART I- BASIC)

- **PROGRAM TYPE:** Fundamental Program in Occupational Injury and Illness Surveillance
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* Contact Number: (517) 353-1846
117 West Fee Hall, East Lansing, Michigan 48824 Email: Rosenman@msu.edu
- **PROGRAM PERSONNEL (WITH THEIR PRIMARY ROLE):**
 - At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
 - Mary Jo Reilly, MS: Epidemiologist, Project Coordinator
 - At the Michigan Department of Community Health:**
 - Thomas Largo, MPH : Epidemiologist
 - Martha Stanbury, MSPH: Co-Investigator
 - At the Michigan Department of Labor and Economic Growth (MIOSHA):**
 - Douglas J. Kalinowski, MS, CIH: Co-Investigator
 - Byron Panasuk, CIH: Industrial Hygienist, Workplace Intervention Coordinator
- **BRIEF OVERVIEW OF PROJECT:** Michigan State University (MSU), the MIOSHA Program at the Michigan Department of Labor and Economic Growth (MDLEG), and the Michigan Department of Community Health (MDCH) have been collaborating in the conduct of state-based occupational health surveillance since 1988, when Michigan received a NIOSH grant for the NIOSH SENSOR Program. Building on these 21 years of experience, the Fundamental Program has undertaken a number of projects to maintain and enhance occupational health surveillance activity in Michigan, including leadership in developing and maintaining the multi-state Occupational Health Indicator process.
- **MAJOR ACCOMPLISHMENTS:**
 - Maintained the surveillance reporting infrastructure and data systems for occupational disease reports submitted under the Michigan Public Health Code.
 - Promoted occupational disease surveillance and reporting of occupational diseases with health care providers, including presentations and displays at medical conferences, in addition to dissemination of the program's Annual Reports and quarterly newsletters.
 - Continued to work on Occupational Health Indicators, including: Utilized the Michigan evaluation report of Occupational Health Indicators (OHIs); assisted in performing quality assurance on multi-state and national 2005 OHI data; revised three sections of the OHI How To Guide; assisted in coordinating a multi-state conference call among those generating OHI's in each state to discuss timelines for benchmarks (e.g., revising How To Guide, submission of data, quality assurance of OHI's, uploading OHI's to CSTE website); developed some of the 2007 Michigan OHIs and are in the process of gathering data on the rest (not all available at this time). (2006 OHI data are about to go through the QA process.)

- Strengthened public health authority to conduct case based surveillance by preparing rules to require reporting of injuries, which are expected to go into effect in September 2010.
- Maintained web-based tools for identifying resources and information about toxic substances.
- Continued surveillance systems for heavy metals and amputations (reported separately).
- Initiated case based surveillance for carbon monoxide and work-related burns based primarily on hospital discharge data. These systems are under development.
- Utilized the on-line access to the database of calls to Michigan's poison control center (Toxicall®) and the surveillance tools of the "National Poison Data System" (NPDS) to identify case reports of pesticides and carbon monoxide.

➤ **COLLABORATION OPPORTUNITIES/PROJECTS WITH OTHER STATES**

- Participated as one of the primary authors editing various drafts of an article that was submitted (and accepted pending revisions) to MMWR regarding work-related injuries and their payment source as ascertained by ten states via the 2007 BRFSS.
- Participated in a number of initiatives from the Council of State and Territorial Epidemiologists to ensure that issues relevant to occupational health surveillance are being addressed, including: the annual revisions to the State Reportable Conditions Assessment, core data elements for all CSTE reportable disease Position Statements, and meetings between the CSTE Executive Board and CDC upper level management.
- Work with the Association of Occupational and Environmental Clinics (AOEC) to encourage AOEC clinics to report cases.

➤ **REPORTS/PUBLICATIONS:**

- Reilly MJ, Rosenman KD. *2008 Annual Summary of Occupational Disease Reports to the Michigan Department of Labor and Economic Growth*. Michigan State University. August 2009.
- Four issues of the newsletter "Project Sensor News" were written and distributed to ~ 300 health care professionals.

➤ **CHALLENGES AND LESSONS LEARNED**

- This year, as in past years, MDCH indicator staff devoted considerable amount of time to the quality assurance process for the OHIs from all the states, in preparation for posting on the CSTE website, to the detriment of having time to work on other projects. Currently no formal system has been established across the states and NIOSH to perform this important function.

➤ **PLANS FOR NEXT YEAR:** Indicator development and publication on the CSTE website will continue, with Michigan leading in the coordination and data compilation. The report "Thirteen Indicators of the Health of Michigan's Workforce" will be updated. Annual reports and newsletters will continue to be published. On-going investigations, outreach to healthcare providers and all other occupational disease surveillance activities will continue. The proposed injury rules will be promulgated. Two new annual reports, one on carbon monoxide and one on work-related burns will be prepared and distributed.

**WORK-RELATED AMPUTATIONS SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 20010**

STATE: MICHIGAN

NAME OF PROJECT: Fundamental Program (Part 2 - Work-Related Amputations)

- **PROGRAM TYPE:** Fundamental Program in Occupational Injury and Illness Surveillance
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* Contact Number: (517) 353-1846
117 West Fee Hall, East Lansing, Michigan 48824 Email: Rosenman@msu.edu
- **PROGRAM PERSONNEL (WITH THEIR PRIMARY ROLE):**
 - At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
 - Mary Jo Reilly, MS: Epidemiologist, Project Coordinator
 - At the Michigan Department of Labor and Economic Growth (MIOSHA):**
 - Douglas J. Kalinowski, MS, CIH: Co-Investigator
 - Byron Panasuk, CIH: Industrial Hygienist, Workplace Intervention Coordinator
 - At the Michigan Department of Community Health:**
 - Thomas Largo, MPH : Epidemiologist, Amputations Coordinator
 - Martha Stanbury, MSPH: Co-Investigator
- **BRIEF OVERVIEW OF PROJECT:** Michigan State University (MSU) has been receiving medical records of hospitalized or emergency department patients sustaining work-related amputations since 1997, reported under the Public Health Code. In 2004, MSU began referring a subset of these cases to the Michigan Occupational Safety and Health Administration (MIOSHA) within the Michigan Department of Labor and Economic Growth (MDLEG), based on referral criteria requested by MIOSHA. MIOSHA reviews each case to determine if an inspection is warranted. The impetus for this referral system was MIOSHA's 2004 strategic plan which contained an objective to reduce the incidence of work-related amputations. A comprehensive, work-related amputations surveillance system began with collection of hospitalized amputation cases from 2006.
- **MAJOR ACCOMPLISHMENTS:** The following summarizes the amputation data for 2008. An annual report for 2008 is in preparation. (Data for 2009 are incomplete due to the lag time between hospitalization and case reporting by the hospitals.)
 - One-thousand-six-hundred-eighty-five (1,685) medical records were reviewed (this count does not include the records reviewed that were received based on the expanded ICD9CM codes (see below) – these were not tabulated). All but two of the state's 133 hospitals responded to the request for records.
 - Five-hundred-eighty-five (585) Michigan residents sustained a work-related amputation requiring hospital medical attention. The amputation rate for males was more than six times the rate for females. Rates were highest for workers aged 20-24. (Rates by specific industry are currently being developed.)
 - Of these 585 cases, 144 were referred to MIOSHA for potential workplace inspection.
 - The referrals were responsible for 57 inspections. These inspections had a average fine of \$2,200. (Note: as of this writing, 12 referred cases have yet to be resolved.)
 - The database used to track cases was expanded in 2008. Previously, information on work-related cases only was entered into the database. For 2008, data were entered on every amputation case, whether it was work-related, non-work-related, or work-relatedness could not be determined. For the latter two case types, only core data were entered. There were two advantages to expanding the database: 1) entered cases could be compared against the Michigan inpatient-outpatient

database and specific cases that hospitals failed to submit could be identified and requested; 2) instances in which medical records for an individual making multiple visits (either to the same hospital or to different hospitals) were categorized in more than one category (e.g., “Unknown if work-related” and “Work-related”) could be compared and reconciled; in addition, data from both records could be used to minimize missing data elements.

- **COLLABORATION OPPORTUNITIES/PROJECTS WITH OTHER STATES:** The expansion of the ICD codes used to identify cases (described below) was undertaken as a result of a study done by the Washington occupational health surveillance program.
- **LIST OF REPORTS/PUBLICATIONS**
 - Largo T, Rosenman KD. *Work-related Amputations in Michigan, 2007*. Michigan Department of Community Health. December 2009. Available at www.michigan.gov/mdch-toxics and www.oem.msu.edu
- **CHALLENGES AND LESSONS LEARNED:** One modification for 2008 was that the project requested a broader scope of medical records in an effort to improve sensitivity. Hospitals were asked to send cases with the following ICD9CM codes (in addition to the original codes 885-887, 895-897): 905.9 (late effect of traumatic amputation), 997.6 (amputation stump complication), V49.7 (lower limb amputation status). Subsequently, approximately twice as many records as in previous years were received. Conducting record review in a timely fashion was a major challenge for staff. Very few work-related cases (less than 0.5%) were identified (some of these may have already been captured using the original codes – this has not been evaluated) and referrals to MIOSHA and the production of an annual report were less timely than desired. Based on this experience, the project returned to its original ICD9CM code range when requesting medical records from hospitals for 2009.
- **PLANS FOR NEXT YEAR:**

The surveillance system will be simplified in two ways to reduce staff burden. First, medical records requested will be limited to those with ICD9CM codes 885-887, 895-897. Second, cases determined to be non-work-related will not be data entered. The benefit of the expanded ICD9CM code list and of entering non-work-related cases was minimal but created a large demand on staff. Also planned for the upcoming year is the development of a manuscript on work-related amputations in Michigan for 2007-2008 to be submitted to the *Journal of Occupational and Environmental Medicine* for publication.

**HEAVY METALS SURVEILLANCE
JULY 1, 2009- JUNE 30, 2010**

STATE: MICHIGAN

NAME OF PROJECT: Fundamental Program: (Part 3 - Heavy Metals)

- **PROGRAM TYPE:** Fundamental Program in Occupational Injury and Illness Surveillance
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* Contact Number: (517) 353-1846
117 West Fee, East Lansing, Michigan 48824 Email: Rosenman@msu.edu
- **Program Personnel (with their primary role):**
 - At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
 - Joanna Kica, MPA: Research Assistant
 - Amy Krizek: Research Assistant, Interviewer Coordinator
 - At the Michigan Department of Community Health:**
 - Martha Stanbury, MSPH: Co-Investigator
- **Brief Overview of Project:** Michigan State University (MSU), the MIOSHA Program at the Michigan Department of Labor and Economic Growth (MDLEG), and the Michigan Department of Community Health (MDCH) have been collaborating in the conduct of state-based occupational health surveillance since 1988, when Michigan received a NIOSH grant for the NIOSH SENSOR Program. Building on these 20 years of experience, the Fundamental Program has undertaken a number of projects to maintain and enhance occupational health surveillance activity in Michigan, including the development of a surveillance system based on clinical laboratory reports of arsenic, cadmium and mercury. Reporting of these tests has been mandated by state regulations since September 2005. Protocols for data management, case follow-up and referral were developed. Interviews are conducted of the adults and children whose clinical test results are above the established action threshold. Four annual reports summarizing the data from January 2007 through December 2009 have been prepared and distributed. Over 15,000 reports have been received annually. Elevated levels were determined to be mainly the result of seafood ingestion but other important occupational and environmental exposures were also identified.
- **Key Collaboration/Intervention/Outreach/Evaluation Activities:**
 - A workplace investigation was initiated by MIOSHA for an elevated mercury levels in a worker. Screening samples for mercury vapor were taken at the facility but no mercury vapors were detected. Recommendations were issued regarding incorporating the recognition and health hazards of mercury vapor into the firm's existing practices and procedures.
 - Efforts to obtain lab reports electronically have required collaboration between MDCH staff working on this project and other programs in the MDCH that are working on electronic reporting. Eighty-six percent of all reports are now submitted electronically.
 - Individuals for whom mercury exposure is determined to be related to fish receive an MDCH brochure about how to choose which species of fish to eat. Individuals with elevated arsenic levels who indicated they drank well water are mailed an MDCH brochure about naturally occurring arsenic in wells.

- Case Ascertainment Status of Reports Received: All Ages.

Month/Year Reported	Arsenic Lab Reports	Cadmium Lab Reports	Mercury Lab Reports
July 2009	552	224	541
August 2009	614	347	633
September 2009	541	238	548
October 2009	550	103	524
November 2009	342	192	362
December 2009	460	214	460
January 2010	366	196	338
February 2010	586	297	586
March 2010	688	364	718
April 2010	554	272	578
May 2010	594	241	581
June 2010	510	261	506
Total	6,357	2,949	6,375

Table Notes: Each report represents one test. Most individuals receive more than one test and would be represented multiple times in the above table.

- Patient Interviews July 2009 through June 2010, metals:

	Elevated Arsenic	Elevated Cadmium	Elevated Mercury
Interviews 7/09 -6/10	Completed= 10 Pending= 1 Total= 11	Completed= 3 Pending= 0 Total= 3	Completed= 39 Pending= 3 Total= 42
Cumulative Interviews	Completed=342 Pending= 97 Total= 439	Completed=76 Pending= 49 Total=125	Completed= 136 Pending= 21 Total= 157

➤ **Challenges (ongoing or overcome):**

- Data processing and management of the laboratory reporting system has been challenging, partly because of the unexpectedly large volume of reports and partly because of electronic laboratory reporting issues. As a result, efforts were made to ensure electronic reporting from the laboratories with a large number of reports, all, but one large lab, now report electronically.
- The indications for ordering these tests by physicians is being reviewed, given that the vast majority of test results are non-detects or within normal range. Thirty-two percent of people had all three heavy metals checked and forty-eight percent had two heavy metals checked in 2009. It is likely in these individuals that the health care provider ordered the metal testing without taking an exposure history since taking such a history would indicate it is generally unusual other than

for some work places for a history to suggest exposure to more than a single heavy metal. We plan to evaluate the specialty of the providers ordering the samples for testing and the feasibility of a survey for more information on the indication for the testing.

➤ **Collaboration Opportunities/Projects with Other States:**

None

➤ **List of Reports/Publications:**

- 2009 Heavy Metals Surveillance in Michigan: Fourth Annual Report East Lansing, Michigan: Michigan Department of Community Health and Michigan State University, June 2010.

**WORK-RELATED ASTHMA SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 2010**

STATE: MICHIGAN

NAME OF PROJECT: WORK-RELATED ASTHMA (WRA)

- **PROGRAM TYPE:** Enhanced Program in Occupational Injury and Illness Surveillance: WRA
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* Contact Number: (517) 353-1846
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- **PROGRAM PERSONNEL (WITH THEIR PRIMARY ROLE):**
 - At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
 - Mary Jo Reilly, MS: Epidemiologist, Project Coordinator
 - Amy Krizek: Research Assistant, Interviewer Coordinator
 - At the Michigan Department of Labor and Economic Growth (MIOSHA):**
 - Douglas J. Kalinowski, MS, CIH: Co-Investigator
 - Byron Panasuk, CIH: Industrial Hygienist, Workplace Intervention Coordinator
 - At the Michigan Department of Community Health:**
 - Martha Stanbury, MSPH: Co-Investigator
- **BRIEF OVERVIEW OF PROJECT:** New potential WRA cases are identified through state-mandated occupational disease reporting. The main reporting sources are: hospitals, physicians, workers' compensation, and poison control centers. An emerging source of WRA reports is through death certificate review (through links with our MI FACE Program). We have identified 8 WRA deaths from 2003-2008. We also prospectively review all death certificates where asthma is an underlying COD, for work-related cases. Telephone-administered medical and work history questionnaires are completed. Medical records are obtained for the most recent H & P, and pulmonary function testing. Questionnaire and medical information is reviewed by a board-certified occupational medicine physician (KDR) to determine disease status. If confirmed as WRA, an enforcement MIOSHA inspection may be conducted to: assess sensitizer exposures including air monitoring, review Injury and Illness Logs, conduct brief medical questionnaire interviews with co-workers in the same exposure zone, and assess compliance with applicable standards. A report of the MIOSHA inspection findings is generated. For companies out of MIOSHA jurisdiction, referrals are made to the appropriate agency (ex. Michigan Department of Agriculture). The physician who initially reported the case to the state is sent a copy of the inspection report.
- **MAJOR ACCOMPLISHMENTS: ENFORCEMENT OF OCCUPATIONAL DISEASE REPORTING LAW:** In April 2009, the State began enforcement of the reporting law. Until that time, like disease reporting laws for communicable disease, no attempt had ever been made to penalize a health care provider for non-compliance. In April 2009, seven occupational health clinics were audited to determine the status of their compliance with the occupational disease reporting law; in March 2010, an additional six clinics were audited. Of the 13 clinics audited, six were determined to be in non-compliance with the law, three were in compliance and reporting cases, four had closed or discontinued their occupational health services. All six non-compliant clinics are now in compliance. It is a misdemeanor and \$50 fine for each case not reported. We will audit six additional clinics in the fall of 2010. These audits are expected to generate additional reporting compliance by non-audited clinics. In fact, since the 2009 and 2010 audits, nine other clinics have now begun reporting cases to the state. This is the first time we are aware that any state agency has enforced a public health disease reporting law. The results of the audits will be publicized in the Michigan occupational health community to prompt additional clinics to comply.

SUPPORT THE MICHIGAN STANDARDS COMMISSION TO ENACT NEW STANDARDS FOR DIISOCYANATES AND LATEX: The Michigan Surveillance Program provides statistics and case studies to the MIOSHA Standards Commission in support of their efforts to enact new standards for workers exposed to diisocyanates and latex. In September 2009, we provided the Standards Commission updated information on diisocyanates.

IDENTIFICATION OF INCIDENT CASES OF WRA: There were 189 potential cases identified this past year. Interviews were conducted for 89 of these individuals, identifying 60 new confirmed WRA cases. Follow-up is ongoing for the remaining 100 potential cases. From the 60 new confirmed cases we identified 57 new workplaces. In addition, we conducted 25 MIOSHA enforcement inspections and another 2 inspections are pending. At the workplace inspections, 234 co-workers were interviewed about their work and breathing health.

PHYSICIAN REPORTING SURVEY: In September 2009, surveys were sent to Michigan physicians in three specialties. The surveys were sent to all 211 members of the Michigan Occupational and Environmental Medicine Association (MOEMA), the 464 members of the Michigan Thoracic Society (MTS), and to the 102 members of the Michigan Allergy Society (MAS). Responses were received from 55 MOEMA members, 91 pulmonologists (MTS) and 39 allergists (MAS). Responses indicated that 68% of physicians were aware of the reporting law, and two-thirds who were aware of the law had ever submitted a report to the state. Barriers to reporting included unfamiliarity with reporting mechanism, too busy-forget to report, concern about consequences and confidentiality of reporting, and not confident in diagnosing an occupational disease.

OTHER OUTREACH: Four quarterly newsletters were written and distributed to ~3,000 health professionals (www.oem.msu.edu), an exhibition booth with information on WRA was set up at three annual medical and safety & health conferences, and Dr. Rosenman spoke with labor and management safety and health professionals at conferences and other meetings including:

- Miscellaneous Chemicals Associated with Work-Related Asthma. 2009 National Environmental Public Health Conference. Atlanta, GA, October 2009.
- Work-Related Asthma: An Overlooked Asthma Trigger. AIM Partnership Forum, Lansing, November 2009.
- Work-Related Asthma, An overlooked Trigger among Women Workers, MSU Women's Health Conference, East Lansing, MI, May 2010.
- Prevalence of Respiratory and Eye Symptoms among Welders and Association with Different Welding Techniques. American Thoracic Society. New Orleans, LA, May 2010.
- New Advances in Occ/Env Medicine - Lung Disease, Borgess Hospital, Kalamazoo, MI, May 2010.

➤ **COLLABORATION OPPORTUNITIES/PROJECTS WITH OTHER STATES:**

- We continue to work with Michigan's Asthma Initiative (AIM) to ensure the inclusion of WRA in its programs and outreach. Dr. Rosenman and Ms. Reilly participate in the State's Asthma Initiative Steering Committee. In addition, Dr. Rosenman is the co-chair of the Epidemiology and Statistics Subcommittee of the initiative and Ms. Reilly is the co-chair of the Environmental Quality and Asthma Subcommittee.
- Michigan is working with California, Massachusetts, New Jersey and NIOSH on a paper on Diisocyanates and Asthma. New Jersey is taking the lead on this paper.

➤ **LIST OF REPORTS/PUBLICATIONS:**

- Lutzker LA, Rafferty AP, Brunner WM, Walters JK, Wasilevich EA, PhD, Green MK, Rosenman KD. Prevalence of Work-Related Asthma in Michigan, Minnesota and Oregon. J Asthma 2010; 47:156-161.
- 2009 Annual Report: Tracking Work-Related Asthma in Michigan (in process).
- Rosenman KD. Asthma, Hypersensitivity Pneumonitis and Other Respiratory Diseases Caused by Metal Working Fluids. Current Opinion in Allergy & Clinical Immunology 2009; 9:97-102.

➤ **CHALLENGES AND LESSONS LEARNED:** Identify new sources of reports of potential WRA cases, encourage better reporting of WRA cases among health professionals, identify new or emerging sources of exposure among industries. One way Michigan is working to encourage better reporting is through enforcement of its Occupational Disease Reporting Law, which began in 2009. New sources of case reports are being explored, including: hospital discharge data with an ICD-9 diagnosis of 493 (asthma) and select E codes, death certificates, and NEMSIS (emergency medical services) electronic reports of asthma encounters. Repeated outreach through publications has been critical to ensure awareness about the continuing hazards of exposure to allergens in the workplace; we are actively seeking new media sources, like Twitter, to communicate with stakeholders.

➤ **PLANS FOR NEXT YEAR:**

- Use of Emergency Medical Services data from ambulance runs to identify new WRA cases.
- Audit an additional six occupational health clinics in 2010 to continue to encourage compliance with the reporting law, and publicize the results of the enforcement audits.
- Expand use of automated OD Reporting of the MSU Internal Medicine EMR reporting software to MSU's 7 other campuses.
- Initiate outreach efforts through Twitter, Facebook and Wikipedia.

SILICOSIS SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 2010

STATE: MICHIGAN

NAME OF PROJECT: SILICOSIS

- **PROGRAM TYPE:** Enhanced Program in Occupational Injury and Illness Surveillance: Silicosis
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* **Contact Number:** (517) 353-1846
117 West Fee Hall, East Lansing, Michigan 48824 **Email:** Rosenman@msu.edu
- **PROGRAM PERSONNEL (WITH THEIR PRIMARY ROLE):**
 - At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
 - Mary Jo Reilly, MS: Epidemiologist, Project Coordinator
 - Amy Krizek: Research Assistant, Interviewer Coordinator
 - At the Michigan Department of Labor and Economic Growth (MIOSHA):**
 - Douglas J. Kalinowski, MS, CIH: Co-Investigator
 - Byron Panasuk, CIH: Industrial Hygienist, Workplace Intervention Coordinator
 - At the Michigan Department of Community Health:**
 - Martha Stanbury, MSPH: Co-Investigator
- **BRIEF OVERVIEW OF PROJECT:** New potential silicosis cases are identified through state-mandated occupational disease reporting. The main reporting sources are: hospitals, physicians, workers' compensation, and death certificates. Telephone-administered medical and work history questionnaires are completed. Medical records are obtained for the most recent H & P, chest x-ray, pulmonary function testing, and lung biopsy (if performed). Questionnaire and medical information is reviewed by a board-certified occupational medicine physician (KDR) to determine disease status. If status is confirmed as silicosis, an enforcement MIOSHA inspection may be conducted. MIOSHA inspections: assess current silica exposure including air monitoring, review Injury and Illness Logs, review co-worker chest x-rays if available, and assess compliance with applicable standards. A report of the MIOSHA inspection findings is generated. For companies out of MIOSHA jurisdiction, referrals are made to the appropriate agency (ex. MSHA). The physician who initially reported the case to the state is sent a copy of the inspection report.
- **MAJOR ACCOMPLISHMENTS: ENFORCEMENT OF OCCUPATIONAL DISEASE REPORTING LAW:** In April 2009, the State began enforcement of the reporting law. Until that time, like disease reporting laws for communicable disease, no attempt had ever been made to penalize a health care provider for non-compliance. In April 2009, seven occupational health clinics were audited to determine the status of their compliance with the occupational disease reporting law; in March 2010, an additional six clinics were audited. Of the 13 clinics audited, six were determined to be in non-compliance with the law, three were in compliance and reporting cases, four had closed or discontinued their occupational health services. All six non-compliant clinics are now in compliance. It is a misdemeanor and \$50 fine for each case not reported. We will audit six additional clinics in the fall of 2010. These audits are expected to generate additional reporting compliance by non-audited clinics. In fact, since the 2009 and 2010 audits, nine other clinics not inspected have begun reporting cases to the state. This is the first time we are aware that any state agency has enforced a public health disease reporting law. The results of the audits will be publicized in the Michigan occupational health community to prompt additional clinics to comply.

IDENTIFICATION OF INCIDENT CASES OF SILICOSIS: Forty-five potential new cases were identified; 20 interviews were conducted, yielding six new silicosis cases. Interviews and medical record follow-up of the remaining 25 potential new cases are in various stages of completion. Six new workplaces were identified, only one of which had previously been inspected for silica.

RE-INSPECTION OF FOUNDRIES: As part of a special program to re-inspect all the MI foundries, eight foundries were inspected during this time period. Personal air monitoring for silica was conducted in seven of the eight facilities; six companies had silica levels below the MIOSHA PEL and one was above the PEL. A total of 44 foundries were inspected to date and an additional 4 foundries will be inspected by the end of next year's funding year. Key information collected during these inspections includes silica air monitoring and information on the

presence and content of medical surveillance programs (especially the regular collection of chest x-rays) used by the establishment. The results of these inspections will be compiled and written up once all companies have been inspected.

PHYSICIAN REPORTING SURVEY: In September 2009, surveys were sent to Michigan physicians in three specialties. The surveys were sent to all 211 members of the Michigan Occupational and Environmental Medicine Association (MOEMA), the 464 members of the Michigan Thoracic Society (MTS), and to the 102 members of the Michigan Allergy Society (MAS). Responses were received from 55 MOEMA members, 91 pulmonologists (MTS) and 39 allergists (MAS). Responses indicated that 68% of physicians were aware of the reporting law, and two-thirds who were aware of the law had ever submitted a report to the state. Barriers to reporting included unfamiliarity with reporting mechanism, too busy-forget to report, concern about consequences and confidentiality of reporting, and not confident in diagnosing an occupational disease.

OTHER OUTREACH: An exhibition booth with information on silicosis was set up at three annual medical and safety and health conferences and four quarterly newsletters were written and distributed to ~3,000 health professionals (www.oem.msu.edu). Three presentations were given:

- Developing a National Estimate of Silicosis. State/NIOSH Silicosis Surveillance Meeting, Morgantown, WV, December 2009.
- Results of Spirometry among Individuals in a Silicosis Registry. State/NIOSH Silicosis Surveillance Meeting, Morgantown, WV, December 2009.
- Revisiting Grey Iron Foundries. State/NIOSH Silicosis Surveillance Meeting, Morgantown, WV, December 2009.

- **COLLABORATION OPPORTUNITIES/PROJECTS WITH OTHER STATES:** There is an article pending revision and NIOSH author approval: Reilly MJ, Rosenman KD, Valiante DJ, Schill DP, Socie E, Migliozi A, Middendorf P, Filios MS. Silicosis Still Occurs: 18 Years of Surveillance Data-Michigan, New Jersey, and Ohio, 1988-2005.

➤ **LIST OF REPORTS/PUBLICATIONS:**

- Makol A, Reilly MJ, Rosenman KD. Prevalence of Connective Tissue Disease in Silicosis (1985-2006) A Report from the State of Michigan Surveillance System for Silicosis (submitted).
- Takaro TK et al. Scientists Appeal to Quebec Premier Charest to Stop Exporting Asbestos to the Developing World. Int J Occup Environ Health. 2010 Apr-Jun;16(2):241-248.
- Rosenman KD, Reilly MJ, Gardiner J. Ventilatory Function in Individuals with Silicosis (submitted).
- 2009 Annual Report on Silicosis and Other Lung Diseases in Michigan (in process).
- Sen A, Lee SY, Gillespie BW, Kazerooni EA, Goodsitt MM, Rosenman KD, Lockey JE, Meyer CA, Petsonk EL, Wang ML, Franzblau A. Comparison of Reliability of Classification for Pneumoconiosis of Film and Digital Radiographs: A Modeling Approach. Academic Radiology 2010; 17:511-519.
- Rosenman KD. Pneumoconioses. BMJ Point-of-Care 2009; www.pointofcare.bmj.com.

- **CHALLENGES AND LESSONS LEARNED:** Identify new sources of reports of silicosis cases, encourage better reporting of silicosis cases among health professionals, identify new or emerging sources of silica exposure among industries. One way Michigan is working to encourage better reporting is through enforcement of its Occupational Disease Reporting Law, which began in 2009. Repeated outreach through publications has been critical to ensure awareness about the continuing hazards of silica exposure; we are actively seeking new media sources, like Twitter, to communicate with stakeholders.

➤ **PLANS FOR NEXT YEAR:**

- Audit an additional six occupational health clinics in the fall of 2010 to continue the effort to encourage compliance with the reporting law, and publicize the results of the initial OD Reporting Law occupational health clinic enforcement audits.
- Write up and share the results of the Foundry re-inspections.
- Expand use of automated OD Reporting of the MSU Internal Medicine EMR reporting software to MSU's 7 other campuses.
- Initiate outreach efforts through Twitter, Facebook and Wikipedia.

ACUTE WORK-RELATED TRAUMATIC DEATH SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 2010

STATE: MICHIGAN

NAME OF PROJECT: FATALITY ASSESSMENT AND CONTROL EVALUATION (FACE)

- **PROGRAM TYPE:** Enhanced Program in Occupational injury and Illness Surveillance: Fatality Assessment and Control Evaluation (FACE)
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* **Contact Number:** (517) 353-1846
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 - Debra Chester, MS: Program Coordinator and Field Investigator
 - Mary Jo Reilly, MS: Epidemiologist
- **BRIEF OVERVIEW OF PROJECT:** All notifications of possible work-related deaths are evaluated and then confirmed as being work-related. Source documents (death certificate, medical examiner report/death scene investigation, and police report) are requested for all possible work-related deaths to determine if a death is work-related. Data collection forms are completed for all confirmed work-related deaths. Source documents only are obtained for homicides, suicides and most transportation-related fatalities. For the rest of the work-related deaths, MIFACE attempts to contact the employer/family members via letter and phone call(s) to inquire about their interest in participating in the MIFACE research program and if they would permit a MIFACE site visit. At the site visit, interviews are held to gather facts about pre-, during-, and post-event activities. Based on information gathered during the site visit and from source documents, MIFACE writes a report that contains a summary of the fatal incident, a detailed narrative, the cause of death, pictures/drawings, and prevention recommendations.
- **MAJOR ACCOMPLISHMENTS: SUPPORT SMOKE FREE LEGISLATION FOR WORKPLACES IN MICHIGAN:** We conducted an onsite investigation after notification that a young waitress died from an acute asthma attack while working in a bar/restaurant. We found inadequate ventilation and the absence of a plan to respond to medical emergencies. We attributed her death from asthma to exposure to second hand smoke at the bar where she worked. MIFACE personnel have provided information and copies of the report of the investigation and a peer reviewed publication (Stanbury et al, 2008), to public health groups, and the State's chief medical office. The information was used as part of the effort to educate Michigan residents of the benefits of smoke-free legislation in the for Michigan workplaces. This legislation went into effect on 5/1/2010.

COLLABORATION WITH MICHIGAN FARM BUREAU: Our collaboration with the Michigan Farm Bureau occurred in two distinct areas: (1) safety training and, (2) identification and confirmation of work-related deaths in agriculture. During the late fall of 2009 and winter of 2010, thirteen safety education and training seminars reaching over 500 agricultural employers/owners/family members were conducted in Michigan targeting the agricultural community. The 3-hour seminars highlighted MIFACE data and the factors that contributed to agricultural work-related deaths in 2008, MIFACE fatality investigation reports, pesticide illness and injury data utilizing our acute pesticide illness annual report, agricultural work-related amputations utilizing our annual report, equipment blind spots utilizing NIOSH materials, emergency planning and pinch points on the farm.

IDENTIFICATION OF ACUTE TRAUMATIC DEATHS: Eighty six individuals died as a result of a work-related injury that occurred between 7/1/09-6/30/2010. Of these 86 fatalities, MIFACE initiated an invitation to participate in the research to 27 (46.3%) companies or individuals. Five (5, 18.5%) have participated in the MIFACE program, 15 (55.6%) declined the invitation, and 7 (25.9%) have not responded to follow-up contact or have asked to be contacted again at a later date. Due to the recentness of the fatality or lack of contact information, MIFACE has yet to contact 12 companies/farm families/self-employed individuals. Forty seven (54.7%) of the 86 fatalities will not be contacted by MIFACE; 19 fatalities involving a motor vehicle, 15 work-

related homicides, 4 work-related suicides, 4 struck-by incidents, 2 drug overdoses, 1 fall, 1 explosion, and 1 airplane crash. Five site visits involving fatalities that occurred in 2008 were also conducted this past year.

OTHER OUTREACH: MIFACE has worked with the Michigan/Southern Ontario Chapter of the Grain Elevator and Processing Society (GEAPS) to present and distribute work-related fatality information to chapter members. MIFACE presented fatality data and prevention information to GEAPS members attending the 2010 Michigan Safety Conference. Additionally, a display booth was set up at the GEAPS regional conference in April 2010 and an impromptu presentation was given.

At the 2010 Michigan Safety Conference, two MIFACE presentations were made; one presentation to Public Employers, and one presentation to the Michigan Chapter of the American Society of Safety Engineers.

➤ **COLLABORATION OPPORTUNITIES**

- Michigan Occupational Safety And Health Administration (MIOSHA):
 - MIOSHA Compliance: (1) Work-related death notification, (2) Discuss case with investigating compliance officers, (3) MIOSHA file review, (4) Compliance officer review of MIFACE Investigation Report/MIOSHA summary, (5) MIFACE accompanies MIOSHA on second or third site visit to company under investigation. Companies asked at that time for their participation in the MIFACE program.
 - Censuses of Fatal Occupational Injury: Identification and confirmation of work-related deaths.
 - MIOSHA Consultation Education and Training (CET): (1) Use of MIFACE data during request for proposal for CET Grant Training Fund application meeting, (2) MIFACE investigative reports used in upcoming MIOSHA training classes.
- MIFACE Advisory Board: All Advisory Board members are prominent members of their industry/trade group. The Board reviews MIFACE reports, promotes and distributes MIFACE reports and the MIFACE program website to their trade group members and industry counterparts.
- State of Michigan Agencies to identify and confirm work-related deaths: (1) Michigan State Police (work-related fatal crashes), (2) MDCH (receive death certificates with YES in at work box), Workers' Compensation,
- Michigan State University Extension: (1) Provide safety and health support to extension agents, (2) Provide MIFACE statistics for newsletters, other outreach materials, and presentations
- Michigan Safety News (<http://michigansafetynews.com/>) contributor

➤ **LIST OF REPORTS/PUBLICATIONS:**

- Michigan's Focus on Fatal Falls (submitted)
- 2010 Worker Memorial Day Press Release
- MIFACE Summaries of MIOSHA Inspections
- MIFACE Investigation Reports
- 2008 Annual Report on Acute Traumatic Work-Related Deaths in Michigan

➤ **CHALLENGES AND LESSONS LEARNED:** Identifying stakeholders and continuing to get the reports and other educational material to the worker and past the front desk. MIFACE publications, depending upon the topic have been disseminated by e-mail and hard copy using mailing database. On average, the mailing reaches 200-350 stakeholders per incident as well as a core list of health and safety professionals. Gaining site access to workplaces continues to be a challenge – employers “lawyer up” or do not want to relive event and therefore do not participate. The likelihood of a company participation with the MIFACE program increases if the MIFACE investigator conducts a joint investigation with the MIOSHA compliance officer. Since the collaboration began in 2007, eighty five percent of companies have agreed to participate when MIFACE accompanied MIOSHA.

➤ **PLANS FOR NEXT YEAR:**

- Use of Hospital Reporting for all work-related injuries
- Use of NEMSIS (computerized ambulance runs) for all work-related injuries
- Initiate outreach efforts through Twitter, Facebook, and Wikipedia.
- Two articles in trade based journals/newsletters
- Collaborate with the Michigan Towing Association to develop a safety and health program template

**PESTICIDES SURVEILLANCE
ANNUAL PERFORMANCE REVIEW: JULY 2009 – JUNE 2010**

STATE: MICHIGAN

NAME OF PROJECT: PESTICIDES

- **PROGRAM TYPE:** Enhanced Program in Occupational Injury and Illness Surveillance: Pesticides
- **PRINCIPAL INVESTIGATOR:** *Kenneth D. Rosenman, MD* **Contact Number:** (517) 353-1846
117 West Fee, East Lansing, Michigan 48824 **Email:** Rosenman@msu.edu
- **PROGRAM PERSONNEL (WITH THEIR PRIMARY ROLE):**
At the Michigan Department of Community Health:
 - Abby Schwartz, MPH: Pesticides Coordinator.
 - Martha Stanbury, MSPH: Co-Investigator**At Michigan State University:**
 - Kenneth D. Rosenman, MD: Principal Investigator
- **BRIEF OVERVIEW OF PROJECT:** This program is a continuation and expansion of the pesticides surveillance program in Michigan funded by NIOSH initially under its “Core State-based Occupational Health Surveillance” that began in 2000. Cases are reported under the mandatory occupational disease reporting law. Employers identified by case reports are referred to the Michigan Department of Agriculture (MDA) for enforcement of violations of pesticide use and labeling laws or the Michigan Occupational Safety and Health Administration (MIOSHA) for enforcement of MIOSHA standards. Pesticide poisoning events that meet certain reporting criteria are referred to the NIOSH pesticides coordinator for further referral to EPA. De-identified data are submitted to NIOSH annually. Expansion to include environmental pesticide surveillance began in 2006.
- **MAJOR ACCOMPLISHMENTS:**
 - From July 1, 2009 through June 30, 2010 there were 95 reported occupational cases; 66 of them confirmed. Since 2001, there have been 1,039 occupational reports, with 727 meeting the criteria for confirmed cases.
 - In this same time period (July 1, 2009 through June 30, 2010), there were 147 non-occupational reports; 132 of them confirmed. Since 2006, there have been 1,082 non-occupational reports, with 676 meeting the criteria to be considered confirmed cases.
 - Laboratory rules that went into effect in September 2005 mandated laboratory reporting of cholinesterase. From October 1, 2005 through June 30, 2010 there were 3,158 test results reported, representing over 1,000 individuals. Of these 172 met criteria for follow-up, 67 cases were identified as possible occupational exposure. Follow-up to occupational cases is ongoing.
 - Four significant worker exposure events took place in the past year, resulting in referral to MDA.
 - Starting January 2010, MIOSHA requested referrals of disinfectant cases that were less than six months old. Five cases have been referred so far.
 - Three events met the requirements for priority reporting to NIOSH.
 - The pesticides coordinator continued to represent MDCH on the state-wide Pesticide Advisory Committee. Written quarterly reports with summary data from the surveillance system and case reports are provided at each meeting.
 - The pesticides coordinator provided information on waterborne cases to the CDC.

- MDCH posted a fact sheet for pet owners and sent letters to the Michigan Veterinary Medical Association and the American Veterinary Medical Association (AVMA) about the potential danger of inducing dogs to vomit after they have ingested zinc phosphide containing baits. This resulted in the AVMA putting up a web page with links to our letter and our fact sheet, as well as other links. They also sent out an email alert to about 20,000 veterinarians and put it on their Twitter feed.

➤ **COLLABORATION OPPORTUNITIES/PROJECTS WITH OTHER STATES:**

- Case information and feedback was provided to NIOSH for articles being drafted about drift, fironil, and gender differences in acute pesticide poisonings among farmworkers.
- The pesticides coordinator worked with other states on developing a state annual report template.
- The pesticides coordinator continued to work with NIOSH and other states on the “coding committee” to improve case coding and data collection. As chair of the coding committee, Abby Schwartz keeps the Standardized Variable Document updated.

➤ **LIST OF REPORTS/PUBLICATIONS:**

- The 2008 Annual Report that includes Michigan surveillance data and case summaries was printed and distributed to stakeholders in late 2009/early 2010. It was publicized in several news article and ListSrvs. Schwartz A, Stanbury M, Rosenman KD. *Pesticide Illness and Injury Surveillance in Michigan: 2008*. December 2009. Available at: http://www.michigan.gov/documents/mdch/Pesticides_Annual_report_2007_final_269921_7.pdf
- Michigan contributed to: CDC. *Acute antimicrobial pesticide-related illnesses among workers in health care facilities — California, Louisiana, Michigan, and Texas, 2002-2007*. MMWR May 14, 2010/Volume 59, No. 18.
- We presented a poster describing the evaluation of the 2009 migrant outreach worker training at the June 2010 CSTE meeting.

➤ **CHALLENGES AND LESSONS LEARNED:**

- One challenge to a comprehensive pesticides surveillance system is under-reporting. Reasons for this have been enumerated in many sources
- Another challenge is lack of timeliness in reporting from many data sources. This makes it difficult to contact cases for follow-up. Lack of information from follow-up often results in a case classification of “insufficient information.” The pesticides coordinator searches the internet for contact information when necessary and tries at least ten times to contact cases, but only succeeds in interviewing about 40% of occupational cases.
- Missing data is an additional challenge. There is no follow-up for environmental cases because of limited resources, and limited success in following-up occupational cases. Since case reports come from agencies not involved in surveillance, missing data is common. In addition, even when the case is interviewed, the lack of timeliness can lead to memory loss, so details of the exposure and symptoms may remain unknown.

➤ **PLANS FOR NEXT YEAR:** The surveillance system will continue, including annual reporting to NIOSH and in an MDCH annual report. In addition, a special outreach program will be undertaken to address hazards of disinfectant cleaners.